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POMOXYS PROTACANTHUS Gill.

D. VI. 15. A. VI. 17.

6

Scales (13—30—) 43 —.

14

The *Pomoxys protacanthus* may be at once distinguished among the other species here enumerated by the comparative elongation of the anterior dorsal and anal spines. A single specimen (4565), from Tarboro, North Carolina, is in the Smithsonian collection, and has no opercular spot. The absence of this latter furnishes another specific character, unless it has been obliterated by the alcohol.

The following table gives the relative proportions of the several species :

	4564	4563	4565
Extreme length.....	8 $\frac{1}{2}$	6 $\frac{3}{4}$	6 $\frac{1}{2}$ 6
Body—Greatest height.....	35	31	29
Height of tail behind anal fin.....	14	12	11 $\frac{1}{2}$ 13
Least height of tail.....	11 $\frac{1}{2}$	10	9 $\frac{1}{2}$ 10
Length of tail.....	11 $\frac{1}{2}$	13	15
Head—Greatest length	31	29	29
Height at pupil.....	15 $\frac{1}{2}$	14	14
Length of snout.....	6 $\frac{1}{2}$	6	6
Orbit—Diameter.....	5 $\frac{1}{2}$	6	6
Dorsal—Length of base	27	25	24
Height at first spine.....	3	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Height at last spine.....	11 $\frac{1}{2}$	13 $\frac{1}{2}$	14
Height at longest ray.....	16	16	16
Anal—Height at first spine	4	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Height at last spine	9 $\frac{1}{2}$	12	11
Caudal—Length of middle rays.....	17	18	17
Length of external rays.....	21	22	22
Pectoral—Length.....	16 $\frac{1}{2}$	17	17
Ventral—Length	15	15	15

On the Genus CAULOLATILUS.

BY THEODORE GILL.

CAULOLATILUS Gill.

=*Caulolatilus* Gill, Proc. Academy of Natural Sciences, of Philadelphia, 1862, p. 340.

Dekaya Cooper, Proc. California Academy of Natural Sciences, iii. p. 70, 1864. *Latilus* sp. *Cuv. et Val.*

Body much compressed, elongated, with the height nearly uniform to the anus; thence gradually decreasing to the caudal peduncle, which is moderately narrowed.

Scales small, oblong, with a rather large central, minutely granular and estriate area, from the posterior portion of which the rhipidal ridges radiate; and with a wide muricated posterior border; the exposed surfaces are vertical, especially near the head.

Lateral line indistinct, parallel with the back; median on the caudal peduncle.

Head compressed, scarcely oblong, with the profile boldly decurved, the forehead flattened. Forehead behind cheeks and opercula, except interoperculum, covered with *ctenoid* scales like those of the body. *Eyes* subcircular, large. *Preorbital* bone elongated rhomboid, with the height less than the di-

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iameter of the eye; cheeks longer than high. *Nosrils* approximated, simple. *Preoperculum* esinuate, pectinated. *Operculum* with a blunt, bony projection behind. *Suboperculum* narrow.

Mouth moderate, with the cleft little oblique. *Jaws* even; *supramaxillaries* nearly straight behind, and subtruncated at end. *Lips* thick, the lower attached by a frænum in front.

Teeth on the jaws alone, in a broad, villiform band in front, preceded by a row of larger acute ones continued to the corners of the mouth; the hindmost teeth enlarged canines directed forwards.

Branchiostegal rays six. (Branchial membrane well developed, and free below.)

Dorsal fin with seven or eight graduated, pungent spines, and rather numerous (22—27) uniform branched rays; antepenultimate normally longest. *Anal* similar to the soft dorsal, armed with one or two pungent spines; first spine, when present, extremely small.

Caudal fin emarginated, with its lobes pointed.

Pectoral fins well developed, longer than the ventrals.

Ventrals thoracic or subbrachial, with the spine slender but acute, and with second ray longest.

Type *Caulolatilus chrysops* Gill.

The genus *Caulolatilus* is widely separated from *Latilus* by the form of the body, structure of the scales and especially by the form of the head and the structure of the fins. It is also related to *Prolatilus*,* but is readily distinguished by the general form, the form of the head, the thoracic position of the ventral fins, as well as the number of dorsal spines and form of the caudal fin.

Caulolatilus was first separated from *Latilus* in an article entitled "Remarks on the relations of the genera, and other groups of Cuban Fishes;" it was said to be distinguished by its form and the structure of the fins, and was founded for the reception of the *Latilus chrysops* C. et V.

Subsequently Dr. Cooper described as a new generic type allied to *Heterognathodon* Blkr., a Californian species of the same genus, and considered it "to be a very aberrant form of the Percoid family, having many characters of other orders.

Four species of the genus are known to me; their relations and differential characters may be expressed by the following scheme:

- | | | | |
|------------------------|---|--|----------------------|
| I. D. vii (—viii.) 24. | A. i. (ii.) 22.† | Profile quadrantiform. | C. <i>chrysops</i> . |
| | | | C. <i>affinis</i> . |
| II. D. viii. 25—26. | A. ii. 25—26. | Profile less decurved, the snout being produced. | |
| a. | Dorsal spines behind longer than the space between the fin and lateral line; pectoral fin equal to distance from snout to middle of operculum | | C. <i>anomalus</i> . |
| β. | Dorsal spines behind about equal to space between fin and lateral line; pectoral fin about three-fourths the length of the head (Jenyns.) | | C. <i>princeps</i> . |

CAULOLATILUS CHRYSOPS.

Latilus chrysops C. et V., ix. 496; *Guict.*, in *Sagra*, tab. 2, f. 1; *Gthr.*, ii. 253.

* *Prolatilus* Gill, (type *Latilus Jugularis* Cuv., Val.,) is distinguished by its general form, as well as the form of the head, scaly forehead and approximated eyes; few (4) dorsal spines, entire caudal and subjugular ventrals.

† My own enumeration of the dorsal and anal ray exactly coincides with Gunther's; Cuvier assigns D. viii. 24. A. ii. 22. I cannot discover the small spine in front of the anal one, and there are certainly only seven dorsal spines,

Caulolatilus chrysops Gill, Phil. 1862, 340.

Hab.—West Indies.

D. vii. (–viii.) 24. A. i. (–ii.) 22. C. v. 1, 7, 6, 1, v. P. 18. V. I. 5.

CAULOLATILUS AFFINIS Gill.

In a young specimen the following peculiarities are exhibited :

The profile describes the outline of a quadrant, and in front is almost vertical. The greatest height is contained less than four times (·27) in the length, *exclusive of caudal* ; that of the caudal peduncle about nine times. The head forms more than three-tenths of the length, while its height bears to its length the proportion of $22\frac{1}{2}$: 31. The diameter of the eye equals almost half the height of the head. The preorbital is very narrow. The teeth of the preoperculum are strong and distant, and those of the middle directed obliquely upwards. The sixth dorsal spine equals a ninth of the length. The anus is behind the middle of the length. The caudal rather exceeds the height of the head. The pectoral equals a fifth of the length ; the ventral is shorter (·18,) and is inserted *beneath the base of the pectoral*, its spine being at the vertical of the upper axil.

D. vii. 25. A. ii. 22. P. 18.

The color is reddish brown on the head and back, lighter on the sides. A very distinct blackish spot is present above the axilla of the pectoral.

This species is very closely related to *C. chrysops*, but the single individual which is a young one about three inches long, differs from adults of the latter, of which I have seen none less than fifteen inches long, by the greater height of the spinous dorsal and the proportions of the other fins, and the situation of the ventrals, strongly serrated preoperculum, as well as the large eyes and narrow preorbital. The last two characteristics are doubtless those of youth. The value of the others yet remains to be ascertained, but it is probable that they will be found to be specific, although, perhaps, slightly modified with age. The species has been known to me for three years, but I have felt reluctant to describe from so small a specimen. The specimen was obtained by Mr. Xantus at Cape St. Lucas.

CAULOLATILUS ANOMALUS.

Dekaya anomala Cooper, Proc. California Academy Natural Sciences, vol. iii. p. 71, fig. 17, 1864.

Hab.—Catalina Island, California.

D. viii. 25. A. ii. 25. P. 18.

Sq. 135—140 $\frac{15}{35}$ pm.

Caulolatilus anomalus is very closely related to the *C. princeps* of the Galapagos Archipelago, but appears to differ in the more elongated spines of the dorsal fin, as well as the longer pectoral and ventral fins. A critical comparison of fresh or wet specimens of both species is, however, requisite not only to verify the differences referred to, but to ascertain the other differential characters. It is scarcely probable that the two forms are co-specific, but at the same time we must remember that at least one species is common to Lower California and the Galapagos Islands.

The type specimen of *C. anomalus* was kindly forwarded for examination by Dr. Cooper, the discoverer. It is an adult, and belongs to the collection of the Geological Survey of the State of California.

CAULOLATILUS PRINCEPS.

Latilus princeps Jenyns, Fishes Beagle, 52, pl. 11. *Gthr.*, ii. 253.

Hab.—Galapagos Islands (Chatham Island.)

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